

**WHAT IS CLAIMED IS:**

1. A method for fabricating semiconductor device comprising the steps of:  
forming an insulating film on a conductive pattern formed on a substrate;  
forming a resist pattern on the insulating film;  
5 performing etching to the insulating film using the resist pattern as a mask to form  
in the insulating film an opening at which part of the surface of the conductive pattern is  
exposed;  
forming an antioxidant layer on the part of surface of the conductive pattern  
exposed while removing the resist pattern; and  
10 depositing a conductive film on the conductive pattern from which the antioxidant  
layer has been removed.

2. The method of claim 1, wherein the conductive pattern contains Cu and the  
antioxidant layer contains CuO as a main component.

15 3. The method of claim 2, wherein the step of forming an antioxidant layer  
includes performing oxygen plasma treatment with a substrate temperature of 120 C° or  
less.

20 4. The method of claim 2, wherein the step of forming an antioxidant layer  
includes performing oxygen plasma treatment with a chamber pressure of 40 Pa or less.

5. A method for fabricating a semiconductor device comprising the steps of:  
forming an insulating film on a conductive pattern formed on a substrate;  
25 forming a resist pattern on the insulating film;

performing etching to the insulating film using the resist pattern as a mask to form in the insulating film an opening at which part of the surface of the conductive pattern is exposed;

forming an antioxidant layer on the part of the surface of the conductive pattern exposed;

removing the resist pattern; and

depositing a conductive film on the conductive pattern from which the antioxidant layer has been removed.

6. The method of claim 5, wherein the conductive pattern contains Cu and the antioxidant layer contains CuO as a main component.

7. The method of claim 6, wherein the step of removing the resist pattern includes performing oxygen plasma treatment with a substrate temperature of not less than 200 C° and not more than 250 C°.

8. The method of claim 5, wherein the step of forming an antioxidant layer includes performing oxygen plasma treatment with a first substrate temperature, and the step of removing the resist pattern includes performing oxygen plasma treatment with a second substrate temperature which is higher than the first substrate temperature.

9. The method of claim 5, wherein the step of forming an antioxidant layer includes performing oxygen plasma treatment at a first pressure, and the step of removing the resist pattern includes performing oxygen plasma

treatment at a second pressure which is higher than the first pressure.

10. The method of claim 5, wherein the step of forming an antioxidant layer includes performing reactive ion treatment to the conductive pattern, and

5 the step of forming a resist pattern includes performing oxygen plasma treatment.